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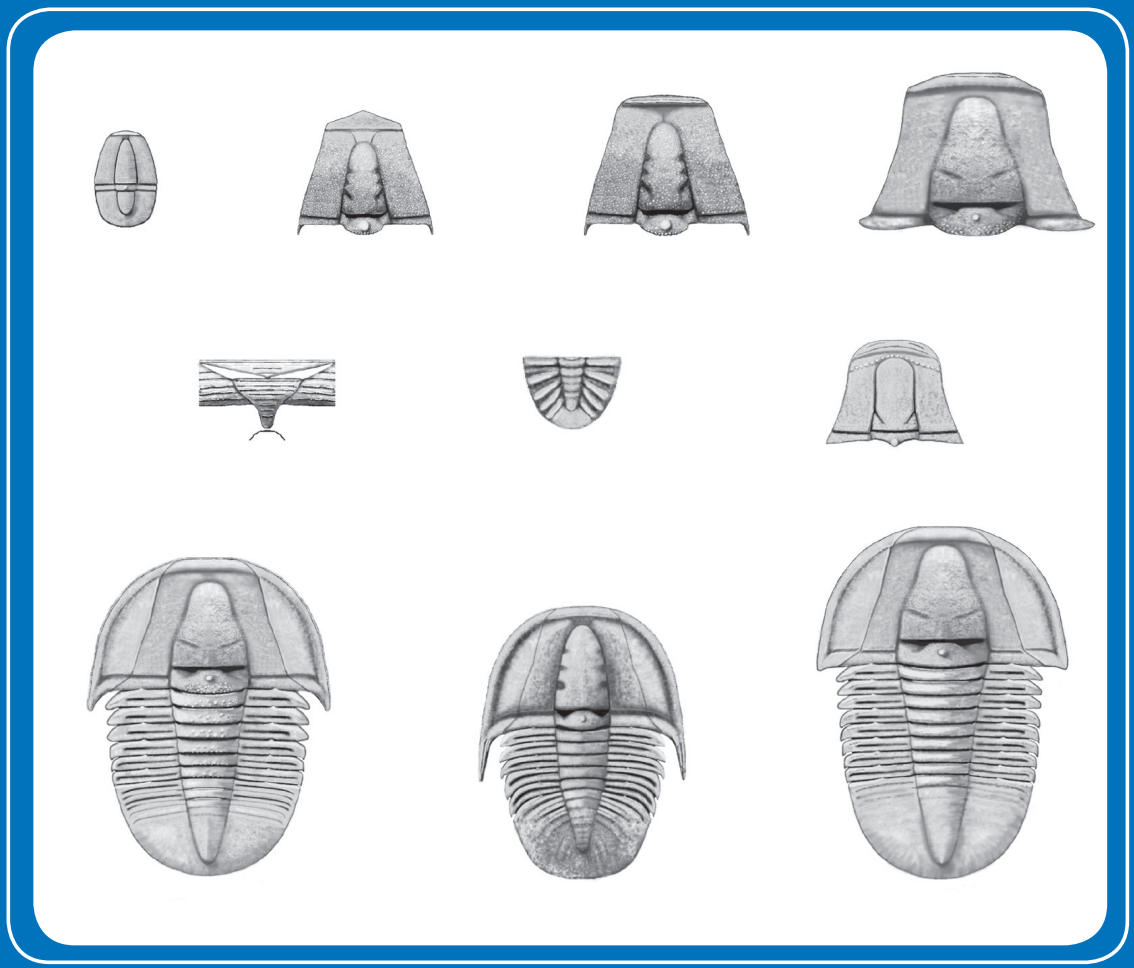

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Cover illustration: Tentative reconstructions of different taxa and ontogenetic stages in the trilobite genus *Drevermannia*, as well as of *Silesiops*? sp. For details, see Basse, M.: Revision und Ontogenie des Trilobiten *Drevermannia schmidti* Richter 1913 aus dem Oberdevon des Bergischen Landes, pp. 9–58 in this issue.
Back cover: Atrium of the Munich Palaeontological Museum, view from the main entrance.

Umschlagbild: Rekonstruktionsversuche für verschiedene Taxa und ontogenetische Stadien der Trilobitengattung *Drevermannia* sowie für *Silesiops*? sp. Für weitere Informationen siehe Basse, M.: Revision und Ontogenie des Trilobiten *Drevermannia schmidti* Richter 1913 aus dem Oberdevon des Bergischen Landes, S. 9–58 in diesem Heft.
Rückseite: Lichthof des Paläontologischen Museums München, Blick vom Haupteingang.

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The rare cricetid rodent *Karydomys* Theocharopoulos, 2000 in the fissure filling Petersbuch 6 (Middle Miocene, Germany)

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Abstract

A molar of the rare cricetid rodent genus *Karydomys* Theocharopoulos, 2000 from the Middle Miocene fissure filling Petersbuch 6 (Germany, Bavaria) is described. The specimen shares several morphological features with *K. wigharti* from the German locality Hambach 6C. Provided that the Middle Miocene assemblage from Petersbuch 6 is homogenous, then the molar might represent the last occurrence of the genus in the fossil record, at around 13.8 Ma.

Key words: Bavaria, Cricetidae, biostratigraphy, Rodentia, Mammalia.

Zusammenfassung

Ein Molar der seltenen cricetiden Nagetiergattung *Karydomys* Theocharopoulos, 2000 wird aus der mittelmiozänen Spaltenfüllung Petersbuch 6 (Bayern, Deutschland) beschrieben. Der Zahn zeigt morphologische Übereinstimmungen mit *K. wigharti* von der Lokalität Hambach 6C. Unter der Voraussetzung, dass der mittelmiozäne Teil der Petersbuch Fauna homogen ist, könnte der hier beschriebene Zahn den jüngsten fossilen Nachweis der Gattung (~13.8 Ma) darstellen.

Schlüsselwörter: Bayern, Biostratigraphie, Cricetidae, Mammalia, Rodentia

1. Introduction

The Weissjura-δ quarry of the A. Schöpfel company at Petersbuch near Eichstätt (Frankian Alp, South-Germany) is well known for its extremely rich and well preserved faunas excavated from fissure fillings. While first finds were brought to the attention of the scientific community already in the 1970ies (Koenigswald 1970; Heissig 1978), the main field work did not commence until 1992, and the first detailed results were published by Rummel (1993) and Bolliger & Rummel (1994). Most of the terrestrial vertebrate groups that have been recorded from Petersbuch 6 range in age from Oligocene to Pleistocene. They provide new insights into the instraspecific variability of species, most often small mammals (e.g., Prieto 2007, Rummel 2000, Prieto & Rummel 2009a,b), and the osteology of extinct forms (Klembara et al. 2010), or yield important morphologic and taxonomic data on taxa that are rare elsewhere in the European fossil record (e.g. Rummel 1997). Among the large collection of more than 1000 teeth discovered from Petersbuch 6 and studied by Prieto (2007), only a single molar of the rare genus *Karydomys* Theocharopoulos, 2000 has been recognized. In this paper, the tooth is described and interpreted with regard to taxonomy and biostratigraphy.

2. Locality

Weissjura-δ quarry of the A. Schöpfel company at Petersbuch near Eichstätt (Frankian Alp, South-Germany); for GPS coordinates and elevation, refer to Ziegler (2003b: 618). Bolliger & Rummel (1994) provided a first inventory of the fauna from Petersbuch 6. Detailed descriptions of small mammals remains were published by Rummel (2000, 2001), Ziegler (2003a,b,c, 2005) and Prieto (2007).

The dating of the locality remains somewhat problematic. Besides very rare Oligocene, lower Miocene and Pleistocene remains, the fauna of the fis-

sure filling is composed of species referring either to MN 6, MN 7 or MN 8 (Prieto 2007). Recently Kälin & Kempf (2009) presented a high-resolution stratigraphy of the Swiss part of the North Alpine Foreland Basin. With regard to faunal composition, Petersbuch 6 can best be correlated with the *Megacricetodon gregarius-Deperetomys hagni* interval zone (as MN7 in Kälin & Kempf's concept) at about 13.8 Ma, provided that the Middle Miocene asemblage is homogenous.

3. Material and Methods

The molar is deposited in the collection of the Bay-erische Staatssammlung für Paläontologie und Geologie in Munich (abbreviated BSPG) under accesion number 1993 IV. Measurements were taken with an ocular micrometer and are indicated in mm. The terminology used in the description of the molar mostly follows Freudenthal et al. (1994).

4. Systematic Paleontology

Order: Rodentia Bowdich, 1821
Family: Cricetidae Fisher von Walheim, 1817

Genus: *Karydomys* Theocharopoulos, 2000

Remarks: Based on several teeth from the French fissure filling Vieux-Collonges originally described as *Cricetodon* sp. (Schaub & Zapfe 1953), Mein & Freudenthal (1971) define the genus *Lartetomys.* Two species have been described from Vieux-Collonges (figured in Mein & Freudentahl 1981): the larger one, *L. mirabilis*, shows similarities with the Cricetodontini, while the second one, *L. zapfei*, is more similar to *Democricetodon*. A few years later, Fejfar (1974) discovered several molars of the smaller species from the Devínska Nová Ves (=Neudorf) fissure 1 and Strakonice. During the following 25 years, only a few additional specimens were described, the larger ones, belonging to the larger species, from Birosse (France, Baudelot & Collier 1978; Mein & Freudenthal 1981), and a questionable m1 of the smaller species from Los Manchones 1 (Spain, Freudenthal & Daams 1988). At the beginning of the 21st century, a rapid increase in knowledge occurred, when Garapich & Kälin (1999), Bolliger (2000), Theocharopoulos (2000) and Kordikova & De Bruijn (2001) described new remains from the Miocene of Switzerland, Poland, Greece, Turkey and Kazakhstan, which greatly imporved our understanding of these cricetid rodents. While Garapich & Kälin (1999) suggested that *L. mirabilis* and *L. zapfei* probably belong to two different genera, Theocharopoulos (2000) defined *Karydomys*, in which he included *L. zapfei*. Thus, in Vieux-Collonges, the species *Lartetomys mirabilis* and *Karydomys zapfei* occur. The West-Central European *Karydomys* record remained quite sparse, however, until Mörs & Kahlthoff (2004) published a large sample from Hambach 6C (Germany). Moreover, Kordikova & De Bruijn (2001) were the first to document the occurence of the genus in the lower Miocene of central Asia (Kazakhstan), and more recently Maridet et al. (2011) extended the known palaeogeographical distribution of the genus even further, into northwestern China (Xinjiang province).

Diagnosis: see Theocharopoulos (2000)

Type species: *Karydomys symeonidisi* Theocharopoulos, 2000

Other species included in *Karydomys*: *Karydomys zapfei* (Mein & Freudenthal, 1971), *K. boskosi* Theocharopoulos, 2000, *K. dzerzhinskii* Kordikova & De Bruijn, 2001, *K. wigharti* Mörs & Kalthoff, 2004, *K. debruijni* Maridet et al., 2011.

Species: *Karydomys* cf. *wigharti* Mörs & Kalthoff , 2004
Fig. 1

2007 *Karydomys* cf. *wigharti* Mörs & Kalthoff , 2004. – Prieto, unpublished, p.76, fig. 34

Type locality: Hambach 6C

Age: Middle Miocene

Material and measurements: 1 M2 (BSPG 1993 IV 1693): 2.30 x 2.02

Description: The two anterolophs are well developed and of the same length; however, the lingual one is lower; they connect to the protocone through a short anterolophule-like crest; the anterior protolophule occurs in the form of a small enamel bud, while the posterior one is well developed and connects to the longitudinal crest; the labial wall of the protocone is concave; the mesoloph reaches the labial border of the M2, and ends in a crest-like mesostyl that connects to the metacone; the sinus is closed by a relatively high cingulum; the metalophule is directed backwards; it connects to the middle of the posteroloph. Both crests delimit a small and rounded posterosinus; roots have not been observed.

Remarks: The tooth described above differs from *Democricetodon* in the more inflated cusps, a diagnostic character of *Karydomys*. In size (Fig. 1) and morphology, the tooth from Petersbuch 6 parallels the corresponding molars from Hambach 6C that have been assigned to *Karydomys wigharti*. The single notable difference appears in the reduction of the anterior protolophule, which is always well developed in the population from Hambach 6C. The specimen from Petersbuch 6 can easily be distinguished

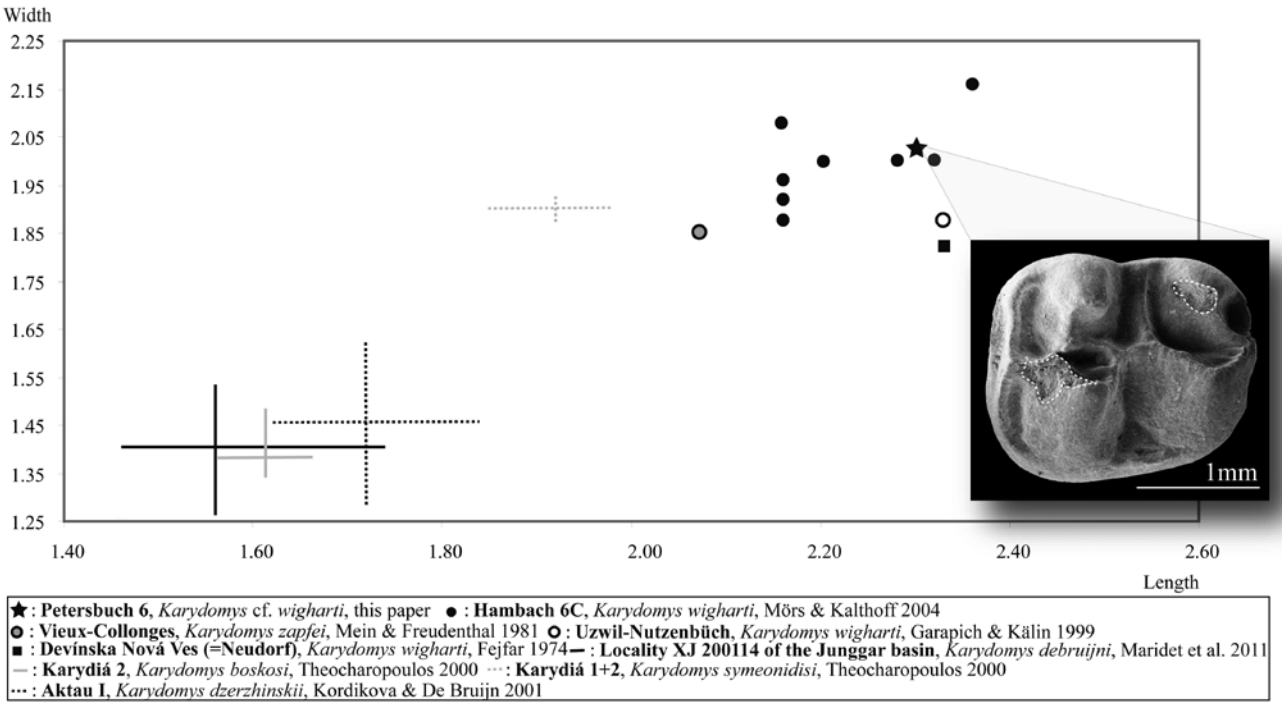

Figure 1: *Karydomys* cf. *wigharti* Mörs & Kalthoff, 2004 from Petersbuch 6, and metric comparison with *Karydomys* upper second molars from Eurasia.

from both *K. dzerzhinskii* and *K. debruijni*, which are noticeably smaller and display a more primitive morphology (see Mörs & Kalthoff 2004; Maridet et al. 2011 for discussion of evolutionary trends within the genus). The Greek species *K. symeonidisi* and *K. boskosi* (both of which also noticeably smaller) are characterized by a strong paraconus-spur (ectolophs in Theocharopoulos 2000). This feature is considered primitive for the genus (Maridet et al. 2011), and is absent in the specimen from Petersbuch 6. Moreover, the presence of the posterior metalophule is one of the arguments used by Mörs & Kalthoff (2004) to separate the M2s of *K. wigharti* and *K. zapfei* from the type locality. Consequently, affinities of the molar from Petersbuch 6 to *K. wigharti* are likely, but cannot be made formal at present because of the isolated and fragmentary nature of the material.

5. Discussion and Conclusions

According to Mörs & Kalthoff (2004: text-fig. 1), the occurrence of *K.wigharti* is restricted to Europe, ranging from Switzerland to Poland, and to the Middle Miocene. The last occurrence of the species, which, at the same time, represents the last occurrence of the genus *Karydomys*, is difficult to precisely identify. The type locality Hambach 6C represents the northernmost occurrence of the species (MN 5-6, 15,2-16 Ma in Nemetschek & Mörs 2003; Mörs & Stefen 2010), and seems to be older than the youngest faunas from the North Alpine Foreland Basin containing *Karydomys*, which post-date the immigration of *Cricetodon* into the basin (late part of the Bavarian OSM unit E). The genus has been recorded by Kälin & Kempf (2009) in their *Megacricetodon lappi-Democricetodon gracilis* and *Democricetodon gracilis-Megacricetodon gersii* interval zones, which that authors correlate with the Bavarian OSM unit F. From Germany, *Megacricetodon* aff. *germanicus* (=*M. gersii* in Kälin & Kempf 2009) has only been recorded for the fissure fillings of the Frankian Alb with confidence (e.g. Petersbuch 68, Prieto & Rummel 2009a), and in association with the gymnure *Parasorex socialis* (Prieto & Rummel 2009b). Petersbuch 68 corresponds to the *Megacricetodon gersii-Megacricetodon similis* interval zone of the Swiss molasse, and thus is younger than any of the *Karydomys* records from the North Alpine Foreland Basin, and those from all other European localities as well. As Petersbuch 6 postdates these sites (*Megacricetodon gregarius-Deperetomys hagni* interval zone), the single m2 might represent the youngest occurrence of the genus in the fossil record, provided that the Middle Miocene part of this fissure filling is homogenous.

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